NASA TechTracS

Detailed Design Document

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One Time Load of TSP (Mod 34)

Prepared by Knowledge Sharing Systems, Inc.

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Introduction

This modification to NASA TechTracS was requested in a Work Request from Dianne Cheek of NASA Langley Research Center on 9/01/98 and is designated as Mod 34.

It consists of a new method to be run once as a maintenance procedure at each field center.

This detailed design document contains sufficient information to complete the software development construction for Mod 34. It also defines a quality assurance plan.

Overview - Table of Contents

Reuse Strategy

This Modification to TechTracS involves a one-time maintenance procedure. The method employed during implementation will be written exclusively for this purpose, and as such does not reuse existing modules. The WriteLog method will be used to log information during execution of the procedure.

Quality Assurance

In order to maintain high quality design and construction the following QA elements will be incorporated:

- All program code must adhere to defined standards, especially in the area of method, form and object naming conventions. The support website contains details of these in the "Coding and Structure Rules" link. More in depth programming standards are also on the support site via the "KSS 4D Programming Rules"

- All system interfaces must also adhere to NASA defined standards. The support website contains these "NASA TechTracS Interface Standards".

- All errors discovered during any formal testing will be recorded in the online Knowledge Sharing Systems Bug Reporting System. This will help ensure that errors are not identified more than once and that they are properly resolved.

- Unit Tests of discrete components will be performed by the developer. These components will be identified in the Detailed Development Plan. As far as is practicable, the goal of this testing is to prove that a given software component performs as designed before it is exposed to the larger environment of integration or system testing. For example, each method should be unit tested to verify proper use of passed parameters and, if appropriate, returned results. Developers will also verify that the components adhere to the Component Checklists as part of the Unit Test. See the Component Reviews below for more details.

- Developers will perform source code tracing where appropriate to prove that the code executes as expected. Research has shown that regular use of source code tracing and unit testing will identify many errors early in the development cycle. Errors identified early are more easily and more cost-effectively resolved.

- Component Reviews will be conducted by an appointed reviewer(s) and reported to the developer. The Component Review Checklists will be used to ensure consistent review quality. Once a component has passed its review, it may participate in integration testing. Part of the review will include an analysis of the component by scanning TechTracS source with SanityCheck from Foresight Solutions. SanityCheck is an application that will perform a read-only scan of the 4th Dimension™ structure file. SanityCheck sifts through the structure file looking for common programming problems as well as checking the integrity of all objects (Forms, Methods, etc) within the structure file. The component checklists are also available on the support site for the following links: " Construction Design Checklist", "Form Checklist", "Structure Checklist", and "Code Checklist".

- Integration Tests will be conducted to ensure that all new or modified components perform as expected when combined with other elements of NASA TechTracS. Due to the integrated nature of the TechTracS development process, extensive, detailed integration testing is inappropriate. However, sufficient testing should be performed to ensure compatibility with other components of the system.

- System Tests will be combined with testing of other modifications that are scheduled for the same release. A system test sequence will be developed to fully validate that the modifications have been properly implemented. After release, the system test sequence should be incorporated into regression test plans for future modifications.

User Manual

Mod 34 is intended as a data maintenance measure. It does not create any interfaces through which the user can interact, and as such requires no user documentation.

Design Methodology

This module involves the creation of a new method which is to be run for data maintenance purposes. The NASA TechTracS conventions that apply to methods, variables, and constants will be utilized during the design and construction of the mod.

Design Status

8/2/99 - Sent email to Dave Makufka asking how he would like to handle records whose case number is not found in the TSP list during mod deployment

8/6/99 - Sent email to Dave Makufka suggesting a second log file that could be generated during mod deployment

8/6/99 - Received email from Dave Makufka authorizing the addition of requirement 6 (second log file)

8/9/99 - Received email from Dave Makufka verifying that the Mod 34 Requirements Document had been reviewed by him

8/10/99 - Sent Mod 34 Requirements Document to Dave Makufka as an email attachment

10/11/99 - Sent email to Chuck Monfradi requesting the TSP list

10/19/99 - Sent Mod 34 DDD to Dianne for review and approval

10/20/99 - Sent email to Dave Makufka with the results of an analysis performed at the Agency Wide server to determine the number of records whose TSP Exists value was "Y" and had a TTO Final Class of "3" or "4"

10/21/99 - Sent email to Dave Makufka verifying the design methodology for the mod

10/21/99 - Received email from Dianne Cheek explaining the different values used in the TTO Final Class field, and how it would relate to the mod design

10/22/99 - Received email from Dianne Cheek approving the Mod 34 DDD, with one alteration

10/22/99 - Received primary copy of TSP list from Chuck Monfradi in Excel spreadsheet

10/25/99 - Sent email to Dianne asking for guidance regarding how to handle case numbers that had extensions. The TSP list did not include these variations.

10/25/99 - Sent email to Chuck Monfradi regarding some deviant case numbers found in the TSP list

10/25/99 - Received email from Dave Makufka authorizing construction on Mod 34
10/25/99 - Received email from Dave Makufka for extended logic to be incorporated into mod design

10/26/99 - Sent email to Dianne about some extended logic that could be incorporated into the mod design (suggested by Dave Makufka), and asked if she wanted to implement it

10/26/99 - Received email from Dianne Cheek authorizing the addition of some extended logic to handle contingencies discovered after reviewing the TSP list from the NTTC

Development and Operational Environment

Modifications to TechTracS are required to be compatible with the following processors and operating systems:

1. Intel Pentium - Windows 95, Windows 98, Windows NT 4
2. Motorola PowerPC - Mac OS 8.x

Requirements Matrix

The Requirements Matrix is a key map denoting what areas of development are necessary to fully satisfy the requirements. The "Req." column refers to the Requirement Number corresponding to that used in the Requirements Document for this mod. The remaining columns list the List Screens, Data Screens and dialogs, Structure tables, Major Methods and Custom Reports and/or Other major items created or modified to meet the specified requirement number. Details on the items created or modified can be found in the Major Methods section of Mod 34 documentation.

Requirements Matrix

Req.	Structure	Data Screen	List Screen	Reports	Methods
1					
2					
3					**ut_CheckTSP**
4					**ut_CheckTSP**
5					**ut_CheckTSP**
6					**ut_CheckTSP**
7					**ut_CheckTSP**
8					**ut_CheckTSP**

Detailed Development Plan - Table of Contents

Introduction

This modification involves a specialized routine whose purpose is to check and adjust the TSP status of Technology records at each field center. The routine will be run once during the deployment of TechTracS FY2000100.

Structure

No new additions to the database structure are needed for this modification.

Record Forms/Custom Dialogs

No new record forms or custom dialogs are needed for this modification.

List Forms/Find Dialogs

No new list forms or find dialogs are needed for this modification.

Custom Reports

No new custom reports are needed for this modification.

Major Methods

Method Name: **ut_CheckTSP**
New or Modified: New
User Method: No
Requirement(s): 3,4,5,6,7,8
Description: The ut_CheckTSP method uses a list of Technology records, which is housed at the NTTC, to verify the status of the TSP Exists field for Technology records at each field center. The list contains the case numbers for all Technology records whose TSP Exists field should be "Y".

During execution, each case number in the list is compared to those in the full set of technology records for that field center and, if a match is found, changes the value of the TSP Exists field to "Y" for the corresponding record in the field center data file. Technology records in the data file whose case number matches an item in the list, but which have extensions (such as KSC-12345-1), will be converted along with the record whose case number matches exactly.

If a case number for a field center is included in the NTTC list but is not found in that field center's data file, that case number is recorded in a log file named "Mod34_NoRecord" for review by the center DBA. The WriteLog method should be used to create and append to the log file.

After the initial comparison with the NTTC list is finished, a second pass of the data scans for records whose Final Class field is equal to "3". These Technology records will have their TSP Exists field set to "N", and a log file named "Mod34_FC3" will be written to record the case numbers and previous values of their TSP Exists field for review by the center DBA. The WriteLog method should be used to create and append to the log file.

The list of TSPs is managed by Chuck Monfradi at the NTTC, and contains a single column of case numbers delimited by carriage returns in a text (.txt) format. During deployment of the mod, the list will be distributed to each field center server by support personnel for use with the ut_CheckTSP method. The method ut_CheckTSP will not be available to non-support personnel.

Appendix

Estimated Hours

Req.	Design	Construction	Testing	Documentation	Tooling	Total
1.	.5	2	0	1	0	3.5
2.	.5	5	0	1.5	0	7
3.	1.5	3	1	.5	.5	6.5
4.	1	1	1	.5	.5	4
5.	1	1	1	.5	.5	4
6.	2	1.5	1.5	.5	.5	6
7.	2	1	1.5	.25	.5	5.25
8.	2	1	1.5	.25	.5	5.25
Totals	**10.5**	**15.5**	**7.5**	**5**	**3**	**41.5**